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International Year of Planet Earth

Report of the Secretary-General*

Summary

The International Year of Planet Earth begins in January 2008. Just how indispensable geoscientific knowledge can be in mitigating natural disasters has been graphically demonstrated by events like the Indian Ocean tsunami and hurricane Katrina. Yet, geologic knowledge benefits all of society all of the time, because everything that we cannot grow — all the power and raw materials on which society depends — comes from the Earth and therefore has to be discovered by geologists.

With fewer students selecting geoscience courses, Earth scientists fear we may be heading for a collapse of geologic educational infrastructure worldwide, since by the time rising prices encourage further exploration, historically low student recruitment may have already led to the closure and dispersal of the educational infrastructure. Because of the central importance of Earth sciences to global society, this possibility should worry everyone.

The United Nations supports sustainable use of the Earth's resources. With a strong focus on public outreach, the International Year of Planet Earth — initiated jointly by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the International Union of Geological Sciences — urges political leaders to act. It has the potential to raise public and political awareness of the central place that Earth materials hold in everyday life, and to enhance the application of such knowledge, with a view to fostering a safer, healthier and wealthier society.

* The present report was prepared in consultation with the United Nations Educational, Scientific and Cultural Organization (UNESCO). Submission of the report was delayed so as to incorporate the latest information on preparatory activities for the Year.

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Fifty years ago, International Geophysical Year achieved a similar reversal. More recently, in Germany, a national Earth Sciences Year (2002) has had measurable effects on student recruitment. The massive support so far achieved for this United Nations venture among the geoscientific community worldwide shows that many consider it a once-in-a-lifetime opportunity to demonstrate the value of the geosciences to society, and to develop a new generation of experts equipped to support the service sector and industry.

Further information is available from www.yearofplanetearth.org.

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I. Evolution of an idea

1. The idea of an International Year of Planet Earth was launched in 2000 at a meeting of the Council of the International Union of Geological Sciences (IUGS). Proclamation of an International Year was seen as a potentially powerful means of demonstrating how society could profit from the accumulated knowledge of the solid Earth as part of system Earth. Following a feasibility study, immediate support was provided by the Earth Science Division of the United Nations Educational, Scientific and Cultural Organization (UNESCO), making it a joint initiative of IUGS and UNESCO (Initiators). After broad consultation, it was decided in 2002 to seek proclamation of the International Year of Planet Earth by the United Nations General Assembly, with a view to providing the best possible exposure to national Governments.

2. On 26 August 2004, the joint Council of IUGS and the International Geological Congress, together representing Earth science communities in 140 countries and regions, adopted a Declaration on the International Year, in which it invited the Executive Board of UNESCO to adopt an International Year of Planet Earth, considering that:

(a) The geosciences could contribute significantly to a safer, healthier and wealthier world;

(b) This potential contribution was seriously underused by society and should be substantially increased;

(c) Proclamation of an international year under the aegis of States Members of the United Nations would help the Earth sciences make their full contribution to the sustainable stewardship of the planet.

3. The General Assembly, in its resolution 60/192 of 22 December 2005, decided to declare 2008 as the International Year of Planet Earth. At least three years will be needed to realize most of the ambitious science and outreach plans, and the Year's triennium will thus run from 2007 to 2009.

II. Science programme

4. The Year's Science Programme Committee developed its terms of reference in 2002. Ten broad themes (see box below) provide the operational framework of the Year's science programme. Brochures were written by specialists and are available in both printed and electronic forms. Printing of the brochures has been made possible through the generosity of several European geologic surveys (those of Austria, Finland, Ireland, Norway, Spain and Sweden), ministries, national scientific bodies and UNESCO. All brochures may be downloaded from www.yearofplanetearth.org.

Themes of the International Year of Planet Earth

1. **Groundwater: towards sustainable use**

Groundwater is normally a renewable resource but great efforts based on proper knowledge should be taken to prevent depletion of this valuable resource for human communities and ecology.

2. **Hazards: minimizing risk, maximizing awareness**

Occurrences of several geo-hazards can already be predicted but not their precise timing; in all cases, however, knowledge-based planning measures can be taken to prevent unnecessary casualties and losses of property.

3. **Earth and health: building a safer environment**

Today, 3 billion people are affected by Earth-related health risks; by applying proper knowledge, many such risks may be mitigated.

4. **Climate: the "stone tape"**

The climate record of our planet is stored in rocks; proper "reading" of such records educates us about the non-human components in climate change now and in the past.

5. **Resource issues: towards sustainable use**

Earth resources may be both an asset and a risk for humanity; wise (sustainable) use of the Earth materials will reduce risks and increase assets available to global societies.

6. **Megacities: going deeper, building safer**

Big cities often have physical stability problems; by using geo-information, cities will become safer and options for underground space may become more realistic.

7. **Deep Earth: from crust to core**

Geologic processes in the deep Earth may surface through geo-hazards; knowing more about such processes may reduce the impact of such hazards.

8. **Ocean: abyss of time**

Our knowledge of ocean floors and ocean margins is still very limited; a better understanding would benefit human societies situated around the oceans.

9. **Soil: Earth's living skin**

There is more life under our feet than above us; a better use of soils would reduce hunger and thirst on this planet and sustain viable ecological conditions.

10. **Earth and life: the origins of diversity**

We can learn so much about conditions of life on Earth, in terms of biodiversity, extinction and development of new species, from the deep and more recent past.

5. Implementation of the science programmes will closely resemble the successful International Geoscience Programme (IGCP), another joint IUGS/UNESCO programme. The Year's science programme will operate essentially in "bottom-up" mode inviting scientists to submit proposals for the 10 science themes, preferably addressing the "key questions" mentioned in the science brochures, through Expressions of Interest (EoI's). These EoI's and subsequent proposals will be evaluated by science implementation teams (SITs), one for each of the themes. These teams are composed of from 8 to 10 experts and became effective in January 2007.

6. Science implementation teams membership includes:

Theme	*Team leader*	*Team members*
Groundwater	Vacant	Struckmeijer (Germany), Adelana (Nigeria), Jones (United Kingdom), Zhang (China), Xu (South Africa), Christian (United States), Wang (China)
Climate	Dodson (Australia) Vice-Chair Science Programme Committee	Alverson (United States), Nield (United Kingdom), Yuan (China), Yim (China), Wigand (Germany), Larocque (Canada), Meadows (South Africa)
Earth and health	Selinus (Senegal)	Centeno (United States), Finkelman (United States), Weinstein (Austria), Derbyshire (United Kingdom), Manay (Uruguay), Gogan (Tuvalu), Davies (United Republic of Tanzania)
Deep Earth	Cloetingh (Netherlands)	Mulugeta (Ethiopia), van der Pluijm (United States), Friedrich (Germany), Gabrielsen (Norway), Roure (France), Ludden (United Kingdom), Zoback (United States)
Megacities	Kraas (Germany)	Nennonen (Finland), Marker (United Kingdom), de Mulder (Netherlands), Coy (Australia), Aggarwal (India), Xue (China), Yu (Republic of Korea), Ribeiro e Sousa (Portugal)
Resources	Sinding-Larsen (Norway)	Shields (United States), Gleditsch (Norway), Ekdahl (Finland), Mienert (Norway), Cherkasov (Russian Federation), Kouda (Japan), Persson (Sweden)
Hazards	Beer (Austria)	Marsh (United Kingdom), Bobrowsky (Canada), Chadka (India), Cutter (United States), Pagliai (Italy), Supharatid (Thailand), Wu (Canada), Heuzé (United States)

Theme	*Team leader*	*Team members*
Ocean	Chen (China)	Lin (United States), Fischer (United States), Devey (Germany), Whitmarsh (United Kingdom), Cannat (France)
Soil	Hartemink (Netherlands)	Nortcliff (United Kingdom), Frossard (Sweden), Boettinger (United States), McBratney (Australia), Mendonca-Santos (Brazil), Zhang (China), Bationo (Kenya)
Earth and life	Talent (Australia)	Blieck (France), Codrea (Romania), Hartzhauser (Austria), Liebermann (United States), Mocanu (Romania), Reichenbacher (Germany), Shen (China)

III. Outreach programme

7. The Outreach Programme Committee has developed a website (www.yearofplanetearth.org), produced flyers and released thousands of general information brochures, leaflets (in many languages) and, with the kind assistance of the Chinese Ministry of Land and Resources, a dedicated brochure. The outreach programme will essentially operate in a "bottom-up" mode as well. Individuals and organizations are invited to submit EoI's, followed by proposals for realization, through the Year.

8. Implementation of the outreach programme will be undertaken largely at national levels. Countries and regions are encouraged to develop their own outreach programme. Some examples of the outreach programme are given below:

- Release of 4,567 biodegradable balloons, each representing 1 million years of Earth history, in London in January 2007, and other balloon launches across the globe (India, São Paulo, Portugal)
- Launch events with politicians, scientists and representatives of industry, evaluating options for a better use of Earth science for solving societal problems
- The World's International Year of Planet Earth launch event, which will be held in Paris on 12 and 13 February 2008
- African launch event to be held in Arusha on 22 and 23 May 2008
- Transparent Earth, through a 1:1 million world digital geologic map (OneGeology) supported by geological surveys around the world, Commission for the Geological Map of the World, IUGS, UNESCO and International Steering Committee for Global Mapping
- DVD on sustainable mineral exploration (International Association on the Genesis of Ore Deposits; Society for Geology Applied to Mineral Deposits)
- TV documentary on Earth sciences (American Geological Institute)
- International conference on indigenous geo-knowledge and geoscience

- Musical symphony: planet Earth, China
- Issuance of a book on geo-poetry
- 40,000 copies of a coffee-table book on the Year and its partners
- International congresses with focus on the Year at International Geological Congress and International Geographical Union (2008), Geological Society of America (2007, 2008 and 2009), etc.
- First world conference of young earth scientists, 2008
- Development of international standards in geo-information (Centre for Geo-Information)
- Quality-control medical geology terminology (International Association for Medical Geology)
- Launch of *Nature Geoscience* journal in 2008
- Creation of the Institute on Earth Science for Underground Cities
- Structural and plate kinematics map of the world (1:50 million, Commission for the Geological Map of the World)
- Metallogenic and geologic map of the Middle East (1:5 million, Commission for the Geological Map of the World)
- United Nations stamps for the Year, to be issued in 2008
- Launch of a Springer journal entitled *Geoheritage*
- A free CD-ROM on over 300 relevant papers on geoscience for society (publisher: Wiley)
- Focus by mosaic artists on "planet Earth" in 2008
- Books on all 10 science themes, to be published by Springer

9. Moreover, many national initiatives are being developed, including:

- 18-wagon Year train crossing the Indian subcontinent (India)
- Exposure through national science congresses (India, Hungary, Bulgaria, etc.)
- The world's biggest deep-drilling research vessel ("Chikyu"), which will carry the Year's logo (Japan)
- Research grants for geoscientists from less developed countries (Austria)
- Participation by award-winning students from developing countries in the global Year launch event (France)
- Intelligent people approach versus intelligent design (Austria)
- Books, journals and articles (UNESCO, *Nature*, Germany, Canada, Netherlands, France, Bulgaria)
- Issue of Year stamps and coins (Australia, Netherlands)
- Wine and earth excursions (Australia)
- Fado song composed for the Year (Portugal)

- Year opening ceremony to be held in parliament and closure ceremony in senate (Spain)
- Geo-bus and geo-truck tours (Austria, Netherlands, Belgium)
- Exhibitions (Netherlands, United States of America, Austria, Germany, Islamic Republic of Iran, Canada)
- New earth science museum (Brazil)
- Teaching courses for journalists and teachers (United Republic of Tanzania, Germany, International Geoscience Education Organization)
- Rock concert dedicated to the Year in central Oslo
- Geoparks (China, Austria, Switzerland, Islamic Republic of Iran, Germany)
- Geotourism conference, Australia 2008
- World Landslide Forum, Japan 2008
- Third International UNESCO Conference on Geoparks, "Terra Vita", June 2008, Osnabrück, Germany
- Lecture tours and excursions (Austria, Netherlands, France)
- New Year concert in museum (Austria)
- Art competitions (Austria)
- Advertisement panels in subways and on trains (Austria)
- BasCamp tent, Switzerland
- Interactive website and maps (Austria)
- Earthlearning (International Geoscience Education Organization, United Kingdom)

IV. Advisory Group

10. Individuals wishing to contribute to the initiative and to support various activities through the science and/or outreach programmes may be invited to become Senior Advisers. The individuals making up this group will advise the Management Team concerning specific contributions to the activities for the Year. Senior Advisers are entitled to represent the Year and are encouraged to publicize the initiative as widely as possible. Currently, there are 48 such Senior Advisers.

11. A small number of highly distinguished individuals have agreed to serve as Goodwill Ambassadors for the Year. These include persons with prominent media profiles in the world's major language areas who are willing to promote the Year and its activities. Patrons include Heads of State and other world leaders who have expressed their willingness to extend their patronage to the Year. As of 1 February 2007, four Patrons had accepted our invitation: Sam Nujoma, Founding President of the Republic of Namibia; Benjamin W. Mkapa, until 2006, President of the United Republic of Tanzania; Sir Mark Moody-Stuart, President of the Board of Anglo American; and Ruud Lubbers, former Prime Minister of the Netherlands.

V. Geoscientific support; partners

12. By mid-2003, the International Union of Geodesy and Geophysics (IUGG) and the International Geographical Union (IGU) had joined this initiative as Founding Partners and were soon followed by the International Lithosphere Programme (ILP), the International Union of Soil Sciences (IUSS) and ISRIC — World Soil Information. Other such partners are the Geological Society of London (GSL) and the Geological Survey of the Netherlands (TNO). A consortium of three geoscientific associations/societies, affiliated to IUGS (International Association of Engineering Geologists and the Environment, International Society for Rock Mechanics, and International Society for Soil Mechanics and Geotechnical Engineering), had joined by mid-March 2005; the International Union for Quaternary Research (INQUA), and the American Geological Institute (AGI), by mid-June 2005; the American Association of Petroleum Geologists (AAPG), by late June 2005; and the American Institute of Professional Geologists (AIPG), by early October 2005, when access to Founding Partnership was closed.

13. Together with the Initiators, the 12 Founding Partners constitute the backbone of the Year. They all have a seat on the Board of the Corporation and are thus responsible for implementation of the Year. They receive exposure through the Year's brochures, the Business Plan, the website and all other official publications of the Year.

14. Associate Partners will have actively supported the International Year of Planet Earth before implementation. They were invited to participate and bear co-responsibility in the science teams, thereby securing representation for their scientific interests within the Year's science programme. Associate Partners also have access to the outreach activities and may suggest such activities to the Outreach Programme Committee. By February 2006, access to Associate Partnership was closed and the final list of 26 Associate Partners reads as follows:

African Association of Remote Sensing of the Environment

Association of American State Geologists

Association of Geoscientists for International Development

Circum-Pacific Council for Energy and Mineral Resources

Commission for the Geological Map of the World

Coordinating Committee for Geoscience Programmes in East and Southeast Asia

European Association for the Conservation of the Geological Heritage

European Federation of Geoscientists

Geological Society of Africa

Geological Society of America

Intergovernmental Oceanographic Commission of UNESCO

International Association of Hydrogeologists

International Association on the Genesis of Ore Deposits

International Council for Science

International Geoscience Programme IGCP

International Palaeontological Association

International Permafrost Association

International Society for Photogrammetry and Remote Sensing

North American Committee on Stratigraphic Nomenclature

Northeastern Science Foundation (United States of America)

Science Council of Asia

Society for Geology Applied to Mineral Deposits

Society for Sedimentary Geology

Society of Economic Geologists

United Nations International Strategy for Disaster Reduction

United Nations University

15. As of March 2006, a new category of international partnership was introduced for new organizations actively supporting the ambitions of the Year upon its incorporation. Non-commercial International Partners will contribute at least US$ 7,500 (or €7,500 if based in Europe) per year over 2007, 2008 and 2009. Rates for Commercial International Partners are double those for non-commercial International Partners. By September 2007, 12 organizations had been registered as International Year Partners: The British Geological Survey (BGS), the Geological Society of America (GSA), the European Geoscience Union (EGU), the Geological Survey of Spain (IGME), the Geological Survey of Ireland (GSI), the American Geophysical Union (AGU), EuroGeoSurveys (EGS), the National Aeronautics and Space Administration (NASA), the Norwegian Geological Survey (NGU), the Geological Survey of Japan (AIST), the Society of Exploration Geophysicists (SEG) and the Italian Geological Survey Organization (APAT).

VI. Political support

16. At a high-level information meeting held at UNESCO headquarters in Paris on 11 February 2004, six nations (Argentina, Brazil, China, Italy, Jordan and Russia) agreed to support the proclamation of the Year once it had been formally proposed in the General Assembly. Decision 171 EX/57, proposed by the United Republic of Tanzania, was adopted (unopposed) by the Executive Board of UNESCO, at its one hundred and seventy-first session on 28 April 2005. Twenty-five nations (Algeria, Brazil, Burkina Faso, Canada, China, Egypt, Germany, Ghana, Italy, Jamaica, Kenya, Mauritius, Morocco, Mozambique, Namibia, Pakistan, Russian Federation, Rwanda, Senegal, Slovenia, Sri Lanka, Swaziland, Turkey, Ukraine and United Republic of Tanzania) voiced their full support, bringing the number of supporting nations to 36.

17. Adoption of resolution 24, on the proclamation of 2008 as International Year of Planet Earth, by the thirty-third session of the General Conference of UNESCO in October 2005 added the support of another 15 nations (Afghanistan, Botswana, Chile, Costa Rica, Cuba, Democratic Republic of the Congo, Indonesia, Nigeria,

Philippines, Portugal, Republic of Korea, Spain, Sudan, Togo and United States of America). With the United Republic of Tanzania again taking the lead in a core group of 82 nations, the General Assembly adopted resolution 60/192, on 22 December 2005, without a vote, upon the recommendation of the Second Committee. By that resolution, the Assembly decided to declare 2008 the International Year of Planet Earth.

VII. Links with other initiatives

18. In the period 2007-2009, three other Earth-related international-year initiatives will be active: the International Polar Year (IPY), the Electronic Geophysical Year (*e*GY) and the International Heliophysical Year (IHY). On 7 September 2005, an agreement on active cooperation and involvement in each other's science and outreach programmes was signed by the leaders of all science-year initiatives (Celimontana Declaration). As the science programme of the International Year of Planet Earth complies closely with the priorities set by the Global Earth Observation System of Systems (GEOSS), cooperation with GEOSS was formalized on 4 August 2007.

VIII. Organization

19. The organizational structure of the Year evolved as the initiative grew in significance. By mid-2002, IUGS and UNESCO had created an informal Management Team with two major constituents, the Science Programme Committee and an Outreach Programme Committee. Regional representation was covered through China, Africa, Northern America and Latin America. The Management Team was complimented by a Treasurer and a liaison with UNESCO.

20. The Management Team was replaced by a Board of Officers upon the Year's registration as a not-for-profit 501 (c) (3) corporation under the law of the State of Delaware (United States), on 16 March 2006. Until the first Board meeting in January 2007, the Initiators had invited members of the former Management Team to act as Officers of the Board, which also included representatives of IUGS and UNESCO. The Corporation is an independent body controlled by the Initiators, Founding Partners, the chairs of the three main lines of Year activities, and main sponsors, as secured in the Year's statutes. Tax exemption is currently being applied for. All major stakeholders are represented in the Board and are responsible for (strategic) decision-making. Day-to-day operations are conducted through the secretariat, based at the Norwegian Geological Survey (NGU), in Trondheim, Norway, and are led by the Executive Director. The Year of has been placed under the patronage of UNESCO and the United Nations Environment Program (UNEP) as the Executive Agencies of the United Nations.

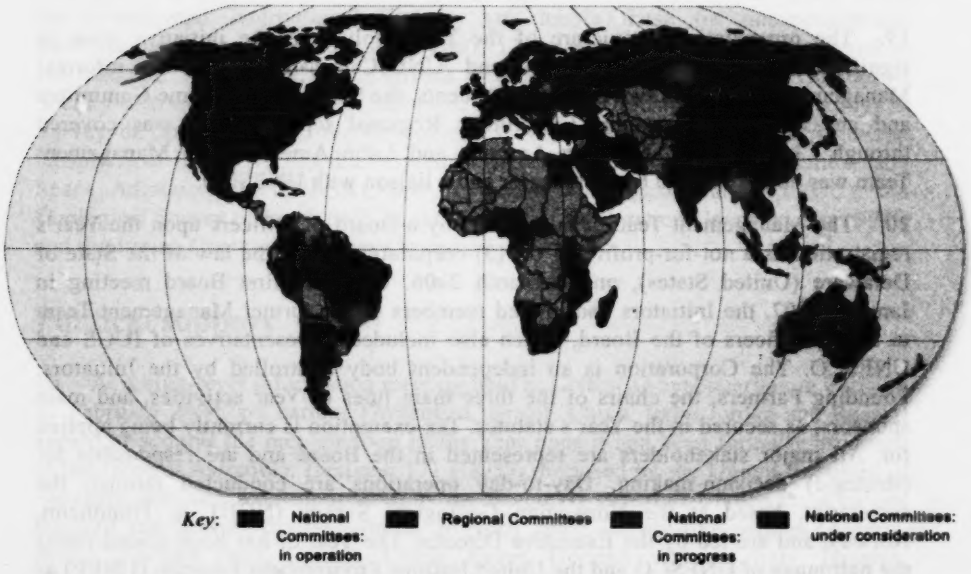
IX. National and regional committees

21. Implementation of the Year's ambitions will be on international and national levels. To that end, National Committees for the Year of Planet Earth have been launched, or are in the process of being launched (see figure). By 3 September 2007, National Committees were operational in 48 countries: Albania, Argentina,

Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Cameroon, Cyprus, the Czech Republic, Denmark, Estonia, France, Georgia, Germany, Hungary, India, the Islamic Republic of Iran, Iraq, Ireland, Italy, Japan, Lithuania, Malaysia, Mexico, Mongolia, Morocco, Mozambique, Namibia, Netherlands, New Zealand, Norway, Peru, Poland, Portugal, the Republic of Korea, Romania, Slovakia, South Africa, Spain, Sweden, Switzerland, Turkey, the United Kingdom of Great Britain and Northern Ireland, the United Republic of Tanzania, the United States of America and Yemen.

22. In several other nations, including Chile, China, Cuba, Finland, Indonesia, Israel, Kenya, Nigeria, the Philippines, the Russian Federation, Saudi Arabia, Slovenia, Suriname, Ukraine and Viet Nam, the creation of such committees is well under way, while still other nations are seriously considering such undertakings. In addition, the IYPE Board granted permission for the development of regional committees for the Year in specific regions where it would be more feasible to establish regional committees than national ones. One Regional Committee was established in East and South-East Asia, covering the 11 nations where the geosciences are addressed by the Coordinating Committee for Geoscience Programmes in East and Southeast Asia (CCOP). Through memorandums of understanding, the national and regional initiatives are formally linked to the Corporation.

Status of National and Regional Committees for the Year



X. Financial aspects

23. Attainment of the aims and objectives of the Year will depend upon attracting substantial financial income from a variety of sources around the world. Financial contributions in cash allocated to the budget in the period 2001-2005 reached a total of US$ 414,900, comprising US$ 133,000 from IUGS, US$ 79,600 from UNESCO

and US$ 202,300 from Founding Partners and Sponsors. In-kind support over that period may be capitalized as close to US$ 1 million.

24. The targeted budget for the implementation of the Year for the Corporation is US$ 5 million. About US$ 20 million (in kind and in cash) has been raised so far by the National Committees for the Year and US$ 1.2 million by the international Corporation.

25. After completion of the triennium, a period of six months will be required for "winding up" activities in 2010 and for reporting to the stakeholders, the General Assembly and the many geoscience communities involved.

26. Three potential main sources of financial support may be identified:

(a) Multinational industry (private companies);

(b) Multinational intergovernmental institutions/development banks/science organizations (donor organizations);

(c) National/regional/local governmental and non-governmental organizations (private companies and donor organizations).

Contributions are anticipated from these bodies both in kind and in cash.